Fig.1

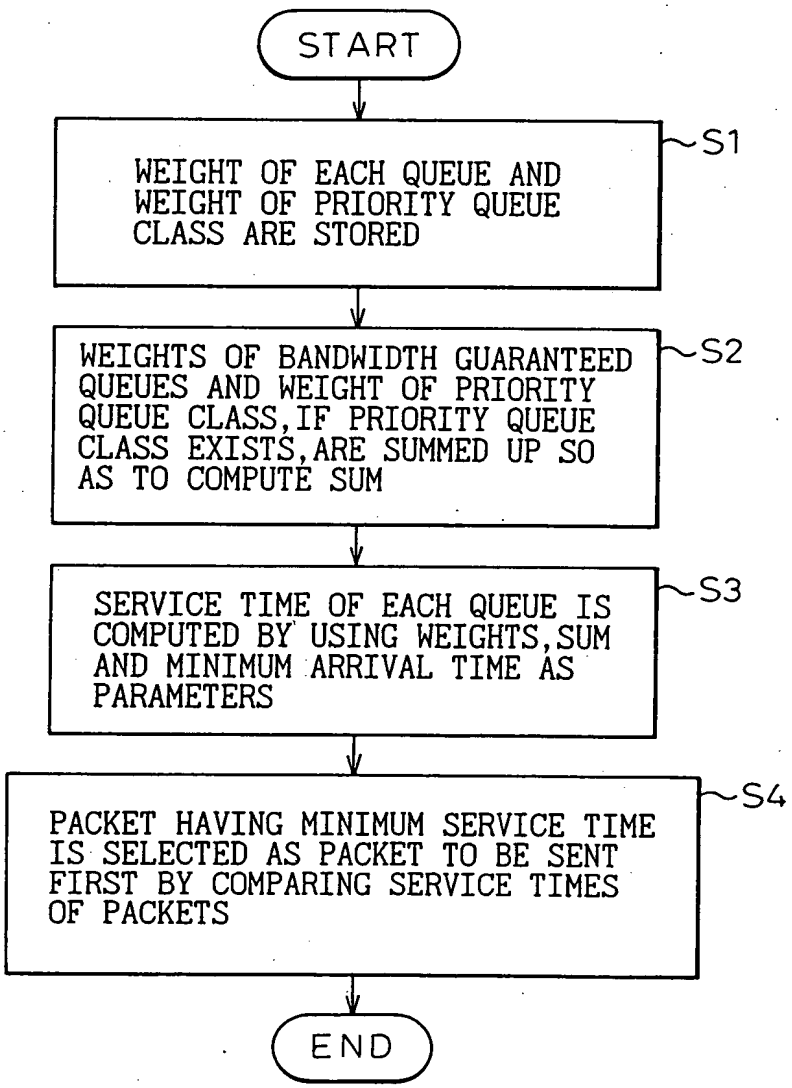

START
WEIGHT OF EACH QUEUE AND WEIGHT OF PRIORITY QUEUE CLASS ARE STORED
S1
WEIGHTS OF BANDWIDTH GUARANTEED QUEUES AND WEIGHT OF PRIORITY QUEUE CLASS, IF PRIORITY QUEUE CLASS EXISTS, ARE SUMMED UP SO AS TO COMPUTE SUM
S2
SERVICE TIME OF EACH QUEUE IS COMPUTED BY USING WEIGHTS, SUM AND MINIMUM ARRIVAL TIME AS PARAMETERS
S3
PACKET HAVING MINIMUM SERVICE TIME IS SELECTED AS PACKET TO BE SENT FIRST BY COMPARING SERVICE TIMES OF PACKETS
S4
END

Fig.2

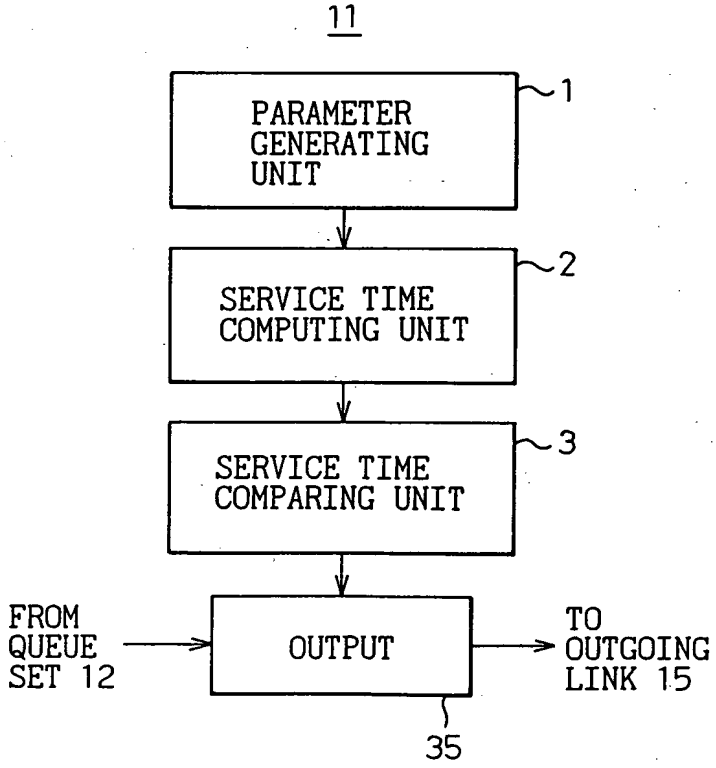

11
PARAMETER GENERATING UNIT
1
SERVICE TIME COMPUTING UNIT
2
SERVICE TIME COMPARING UNIT
3
FROM QUEUE SET 12
OUTPUT
TO OUTGOING LINK 15
35

Fig.3

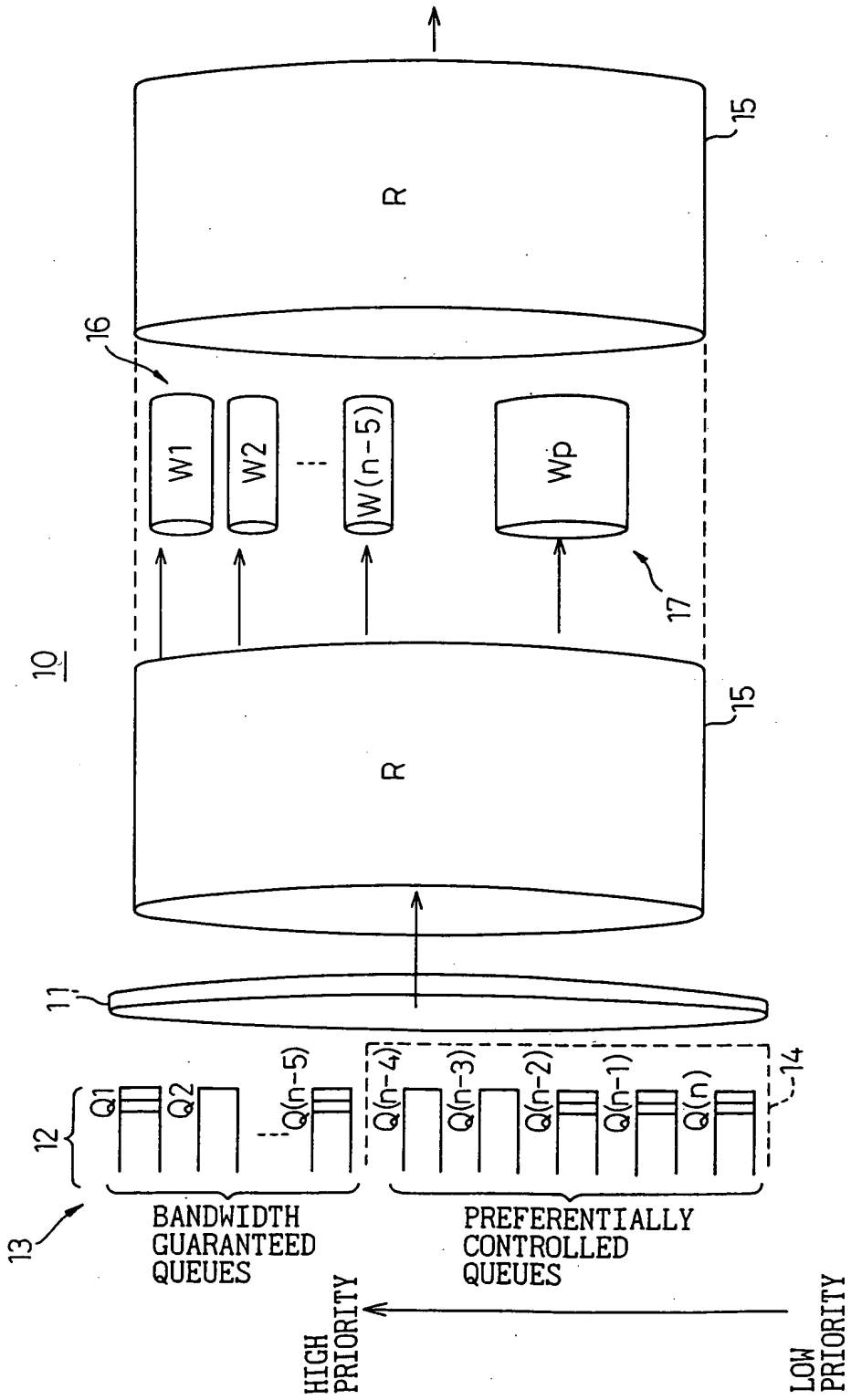

10
11
12
13
14
15
16
17
R
R
W1
W2
W(n-5)
Wp
Q1
Q2
Q(n-5)
Q(n-4)
Q(n-3)
Q(n-2)
Q(n-1)
Q(n)
BANDWIDTH GUARANTEED QUEUES
PREFERENTIALLY CONTROLLED QUEUES
HIGH PRIORITY
LOW PRIORITY

Fig.4

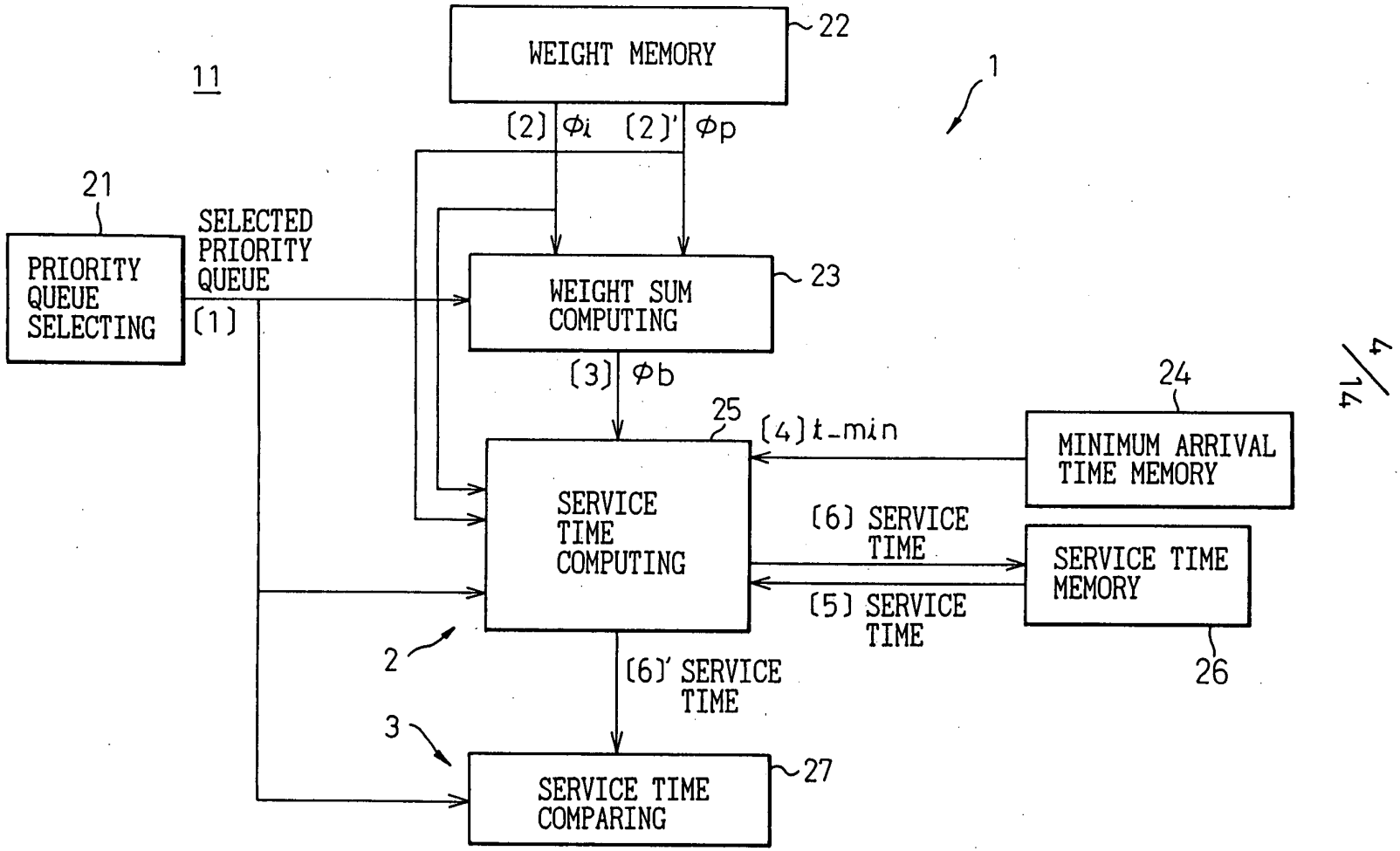

WEIGHT MEMORY
22
11
1
[2] φi [2]' φp
21
SELECTED PRIORITY QUEUE
PRIORITY QUEUE SELECTING
[1]
WEIGHT SUM COMPUTING
23
[3] φb
24
25
[4] t_min
MINIMUM ARRIVAL TIME MEMORY
SERVICE TIME COMPUTING
[6] SERVICE TIME
SERVICE TIME MEMORY
[5] SERVICE TIME
2
26
[6]' SERVICE TIME
3
SERVICE TIME COMPARING
27

Fig.5

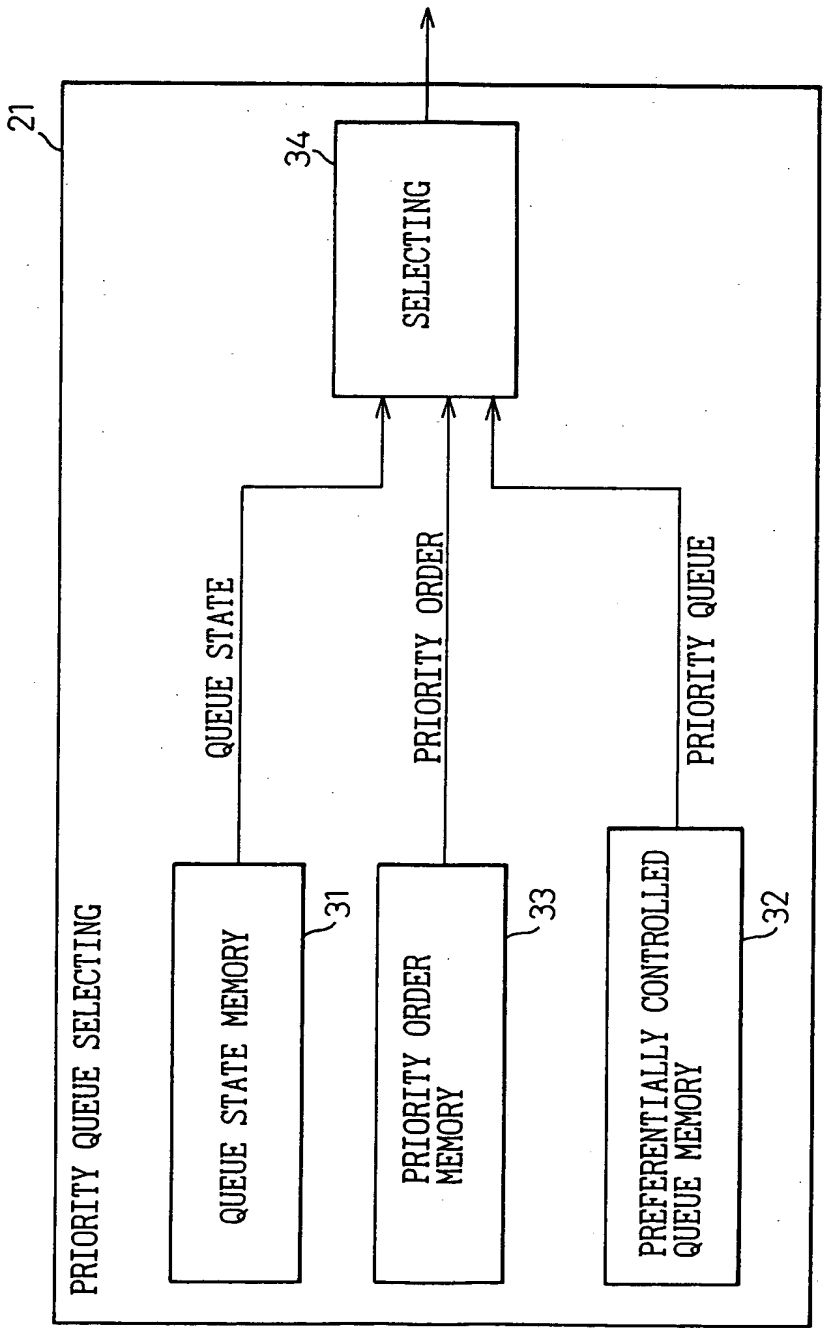

21
PRIORITY QUEUE SELECTING
34
SELECTING
QUEUE STATE
PRIORITY ORDER
PRIORITY QUEUE
QUEUE STATE MEMORY
31
PRIORITY ORDER MEMORY
33
PREFERENTIALLY CONTROLLED QUEUE MEMORY
32

Fig.6

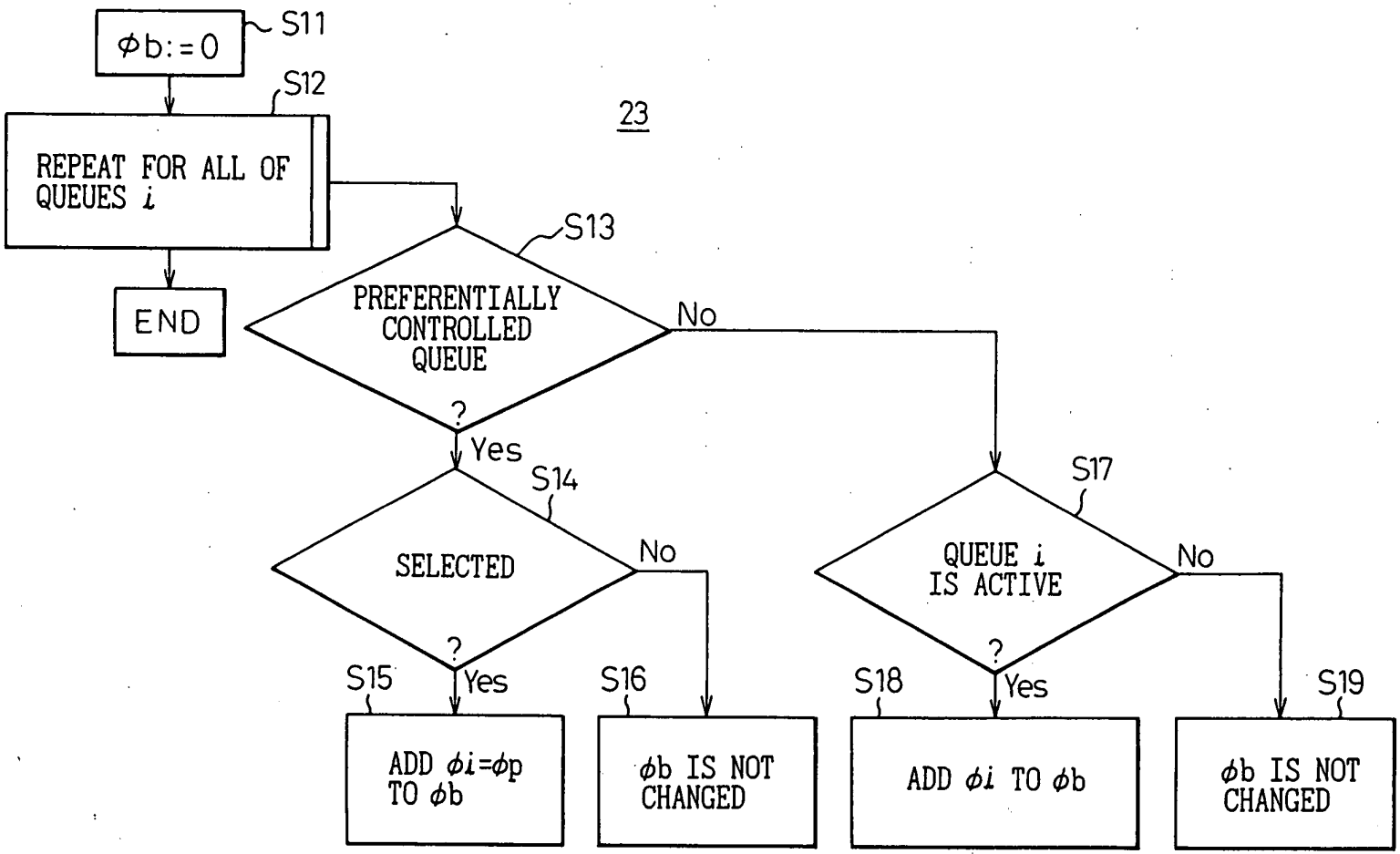
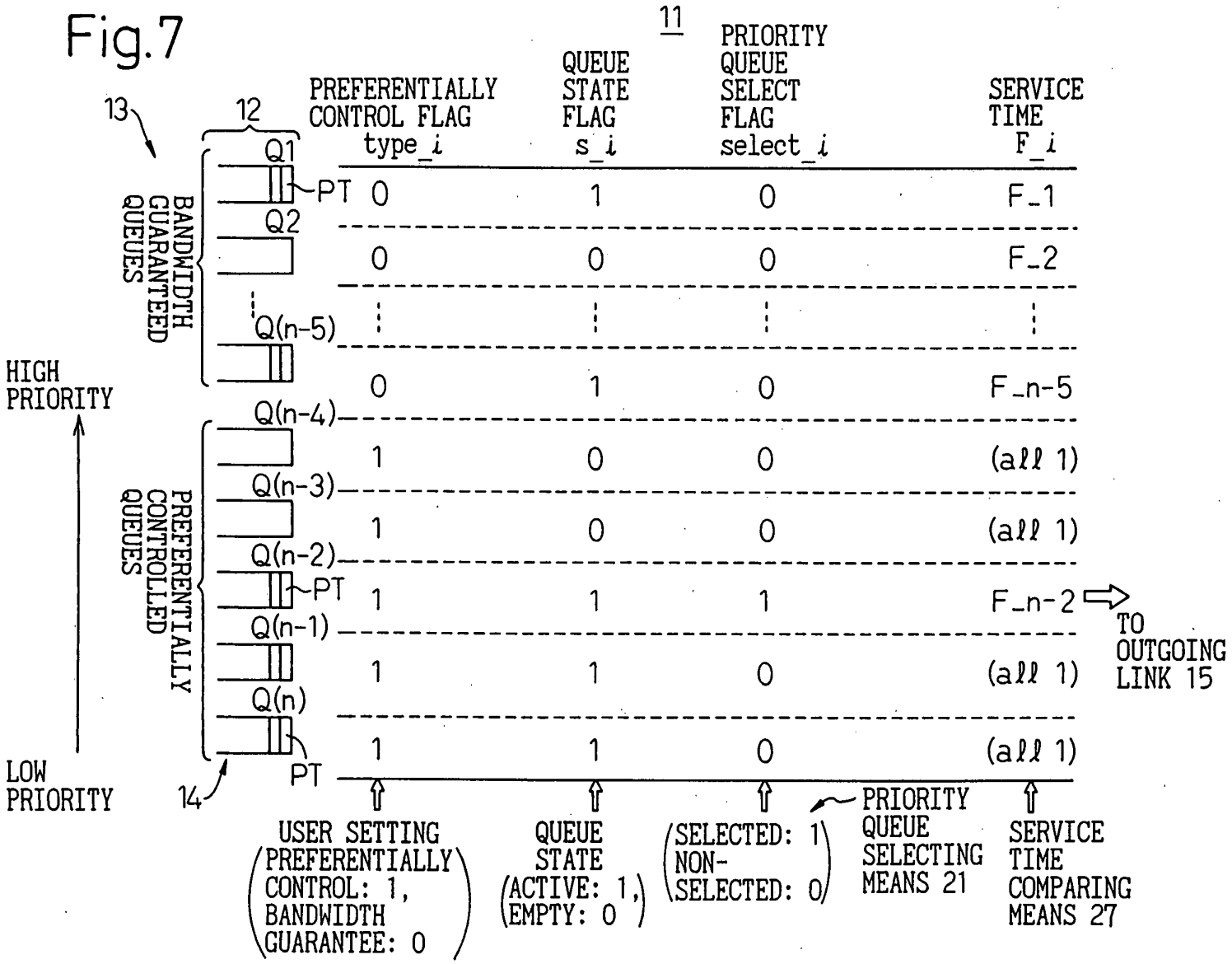

φb:=0
S11
S12
REPEAT FOR ALL OF QUEUES i
END
23
S13
PREFERENTIALLY CONTROLLED QUEUE
?
No
Yes
S14
SELECTED
?
No
Yes
S15
ADD φi=φp TO φb
S16
φb IS NOT CHANGED
S17
QUEUE i IS ACTIVE
?
No
Yes
S18
ADD φi TO φb
S19
φb IS NOT CHANGED

Fig.7


11
13
12
PREFERENTIALLY CONTROL FLAG type_i
QUEUE STATE FLAG s_i
PRIORITY QUEUE SELECT FLAG select_i
SERVICE TIME F_i
BANDWIDTH GUARANTEED QUEUES
PREFERENTIALLY CONTROLLED QUEUES
Q1
Q2
Q(n-5)
Q(n-4)
Q(n-3)
Q(n-2)
Q(n-1)
Q(n)
PT
HIGH PRIORITY
LOW PRIORITY
14
0 1 0 F_1
0 0 0 F_2
0 1 0 F_n-5
1 0 0 (all 1)
1 0 0 (all 1)
1 1 1 F_n-2
1 1 0 (all 1)
1 1 0 (all 1)
TO OUTGOING LINK 15
USER SETTING (PREFERENTIALLY CONTROL: 1, BANDWIDTH GUARANTEE: 0)
QUEUE STATE (ACTIVE: 1, EMPTY: 0)
(SELECTED: 1 NON-SELECTED: 0)
PRIORITY QUEUE SELECTING MEANS 21
SERVICE TIME COMPARING MEANS 27

FOREIGN PATENT DOCUMENT

Fig.8

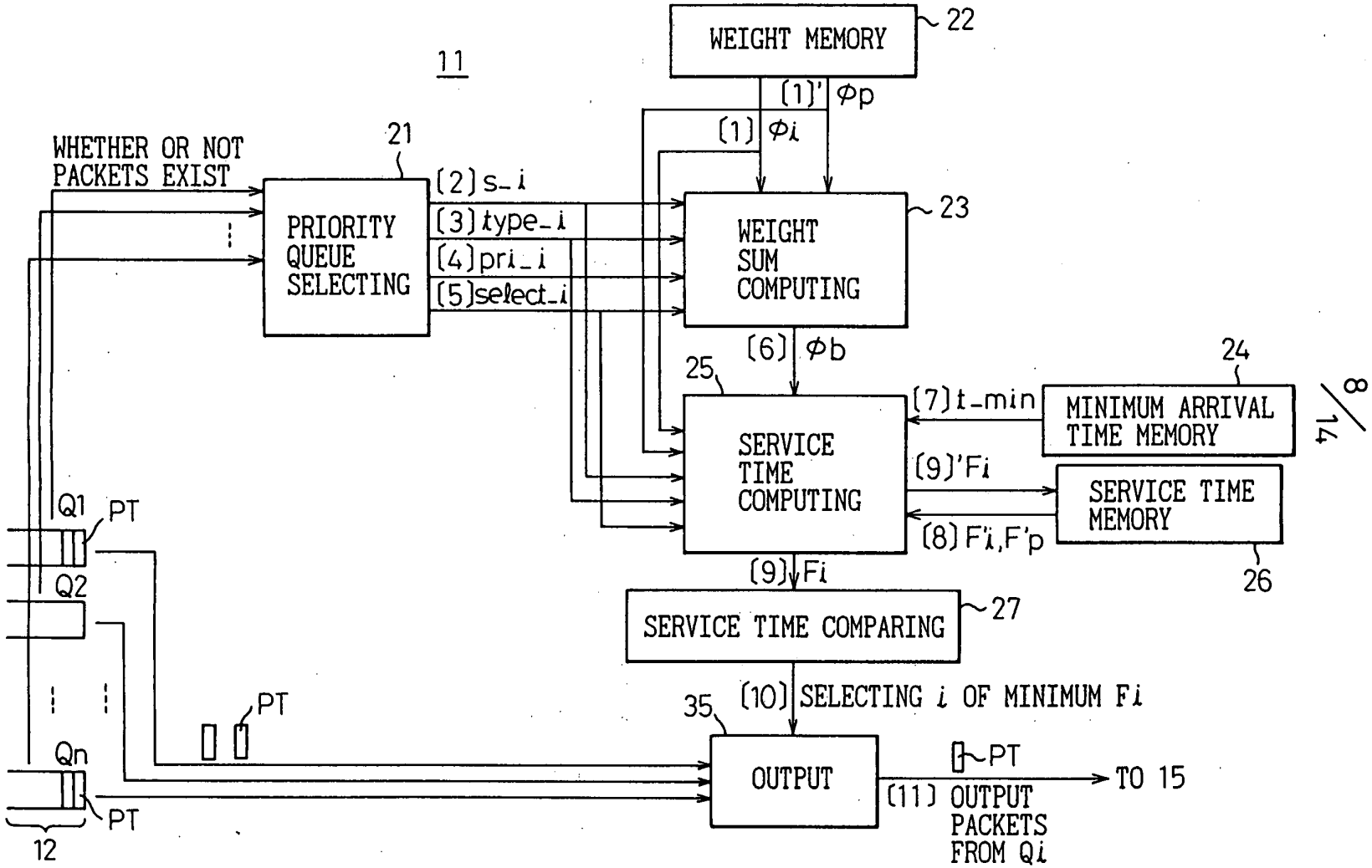


Fig.9

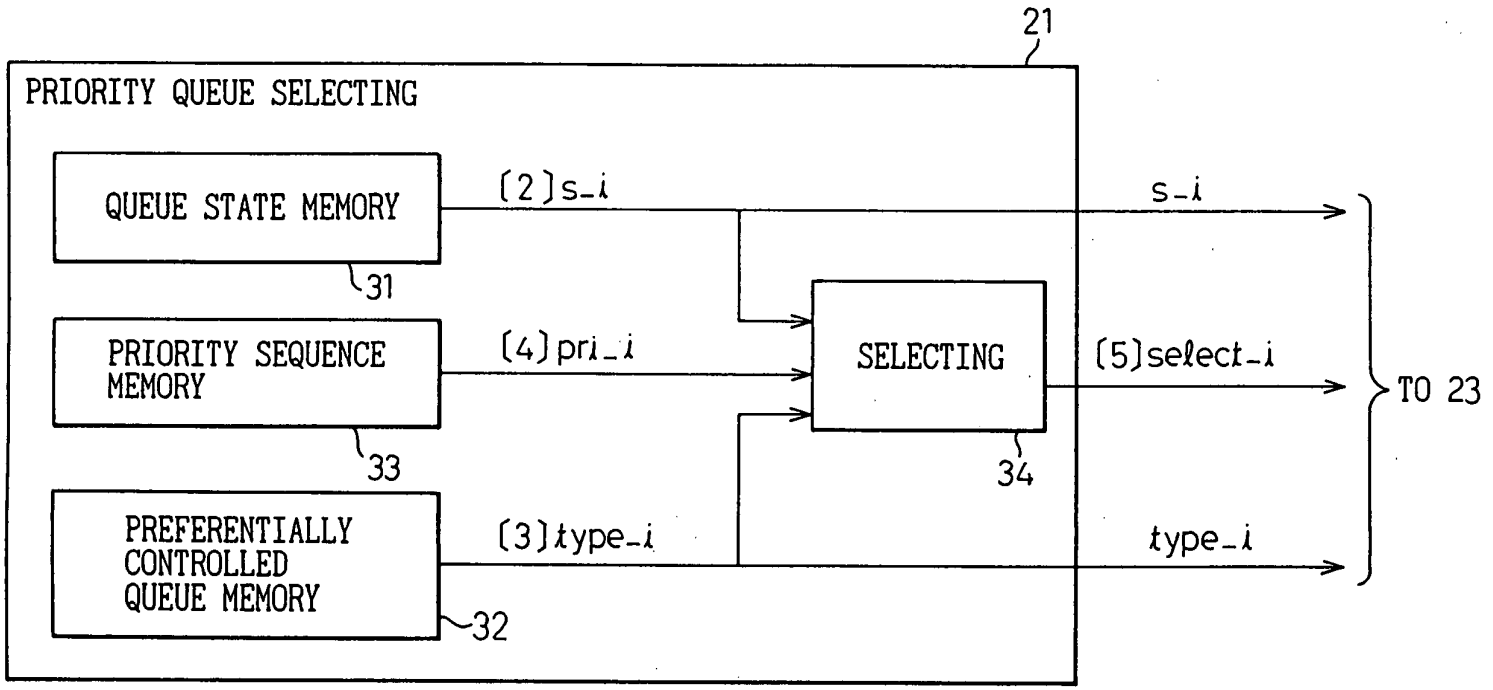

21
PRIORITY QUEUE SELECTING
QUEUE STATE MEMORY
31
PRIORITY SEQUENCE MEMORY
33
PREFERENTIALLY CONTROLLED QUEUE MEMORY
32
[2]s_i
[4]pri_i
[3]type_i
SELECTING
34
[5]select_i
s_i
type_i
TO 23

Fig.10

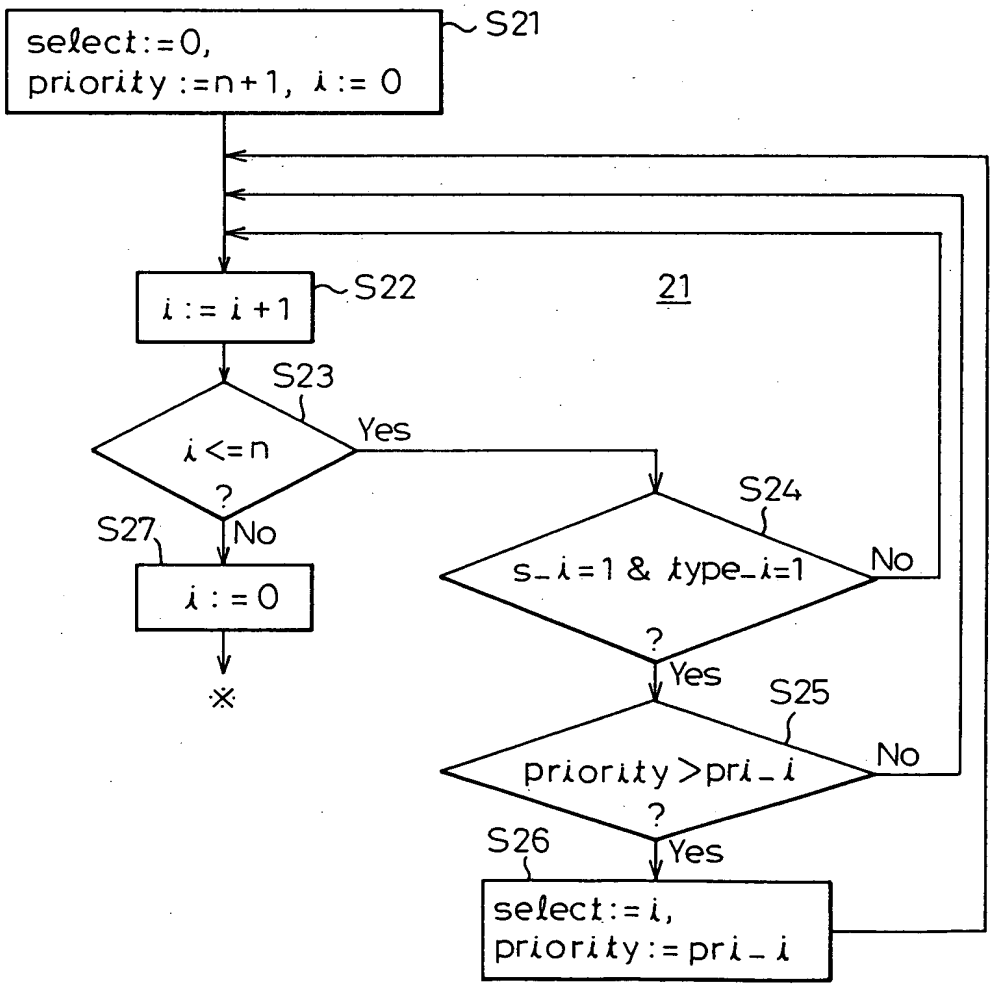

select:=0,
priority:=n+1, i:=0
S21
i:=i+1
S22
21
S23
i<=n
?
Yes
No
S27
i:=0
※
S24
s_i=1 & type_i=1
?
No
Yes
S25
priority>pri_i
?
No
Yes
S26
select:=i,
priority:=pri_i

Fig.11

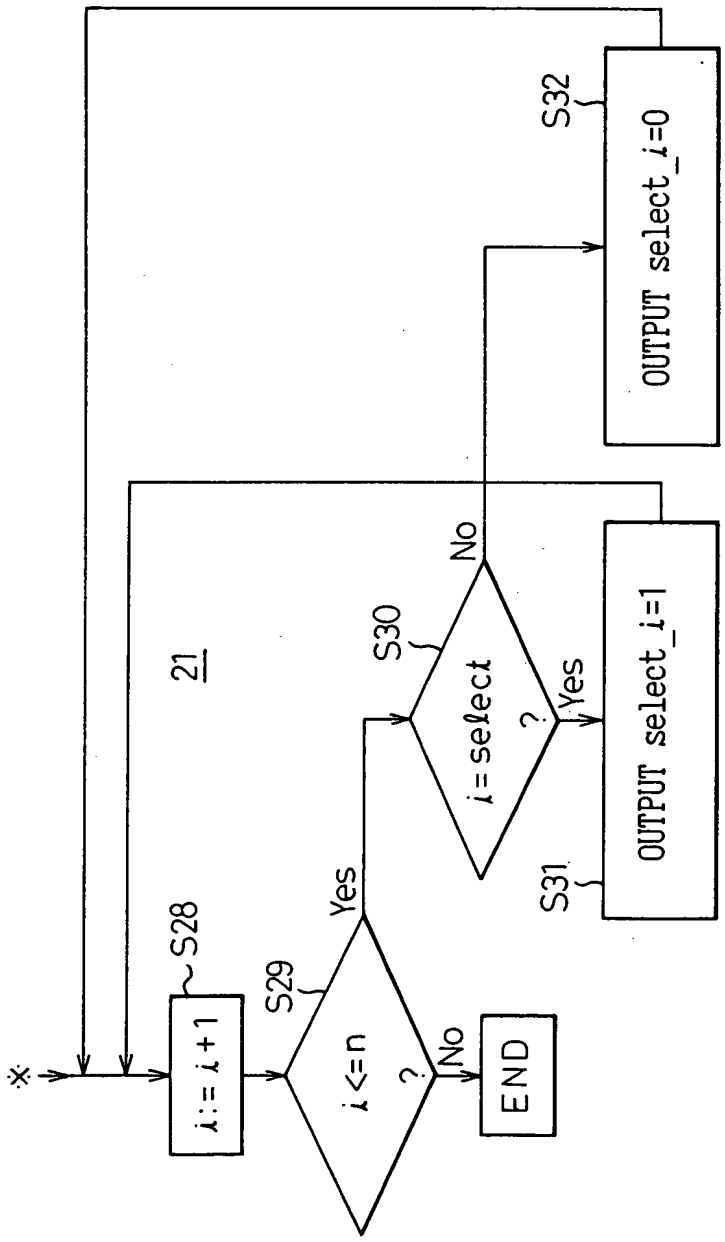

21
S28
i := i + 1
S29
i <= n
Yes
No
END
S30
i = select
Yes
No
S31
OUTPUT select_i=1
S32
OUTPUT select_i=0

Fig.12

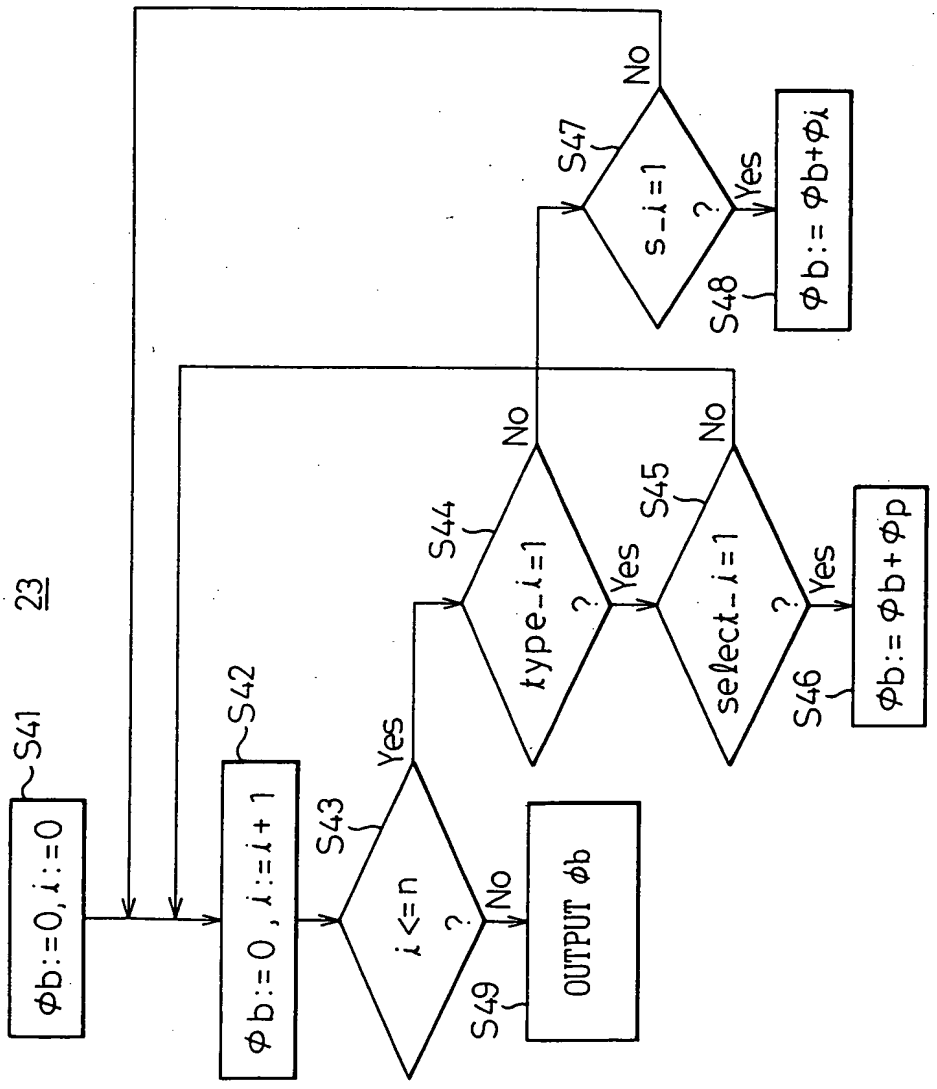

23
S41
Φb:=0, i:=0
S42
Φb:=0 , i:=i+1
S43
i<=n ?
Yes
No
S44
type_i=1 ?
Yes
No
S45
select_i=1 ?
Yes
No
S46
Φb:=Φb+Φp
S47
s_i=1 ?
Yes
No
S48
Φb:=Φb+Φi
S49
OUTPUT Φb

Fig.13

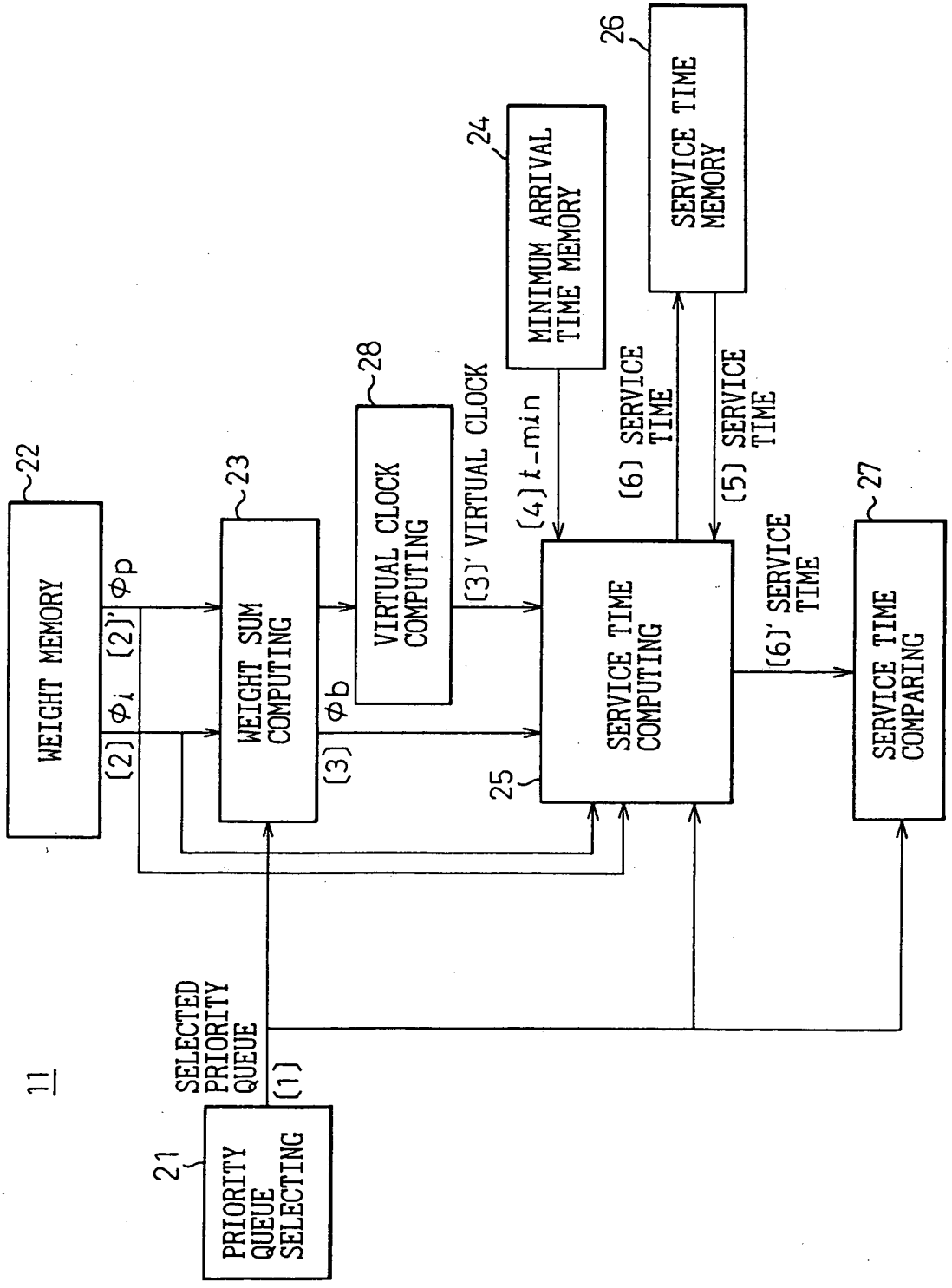
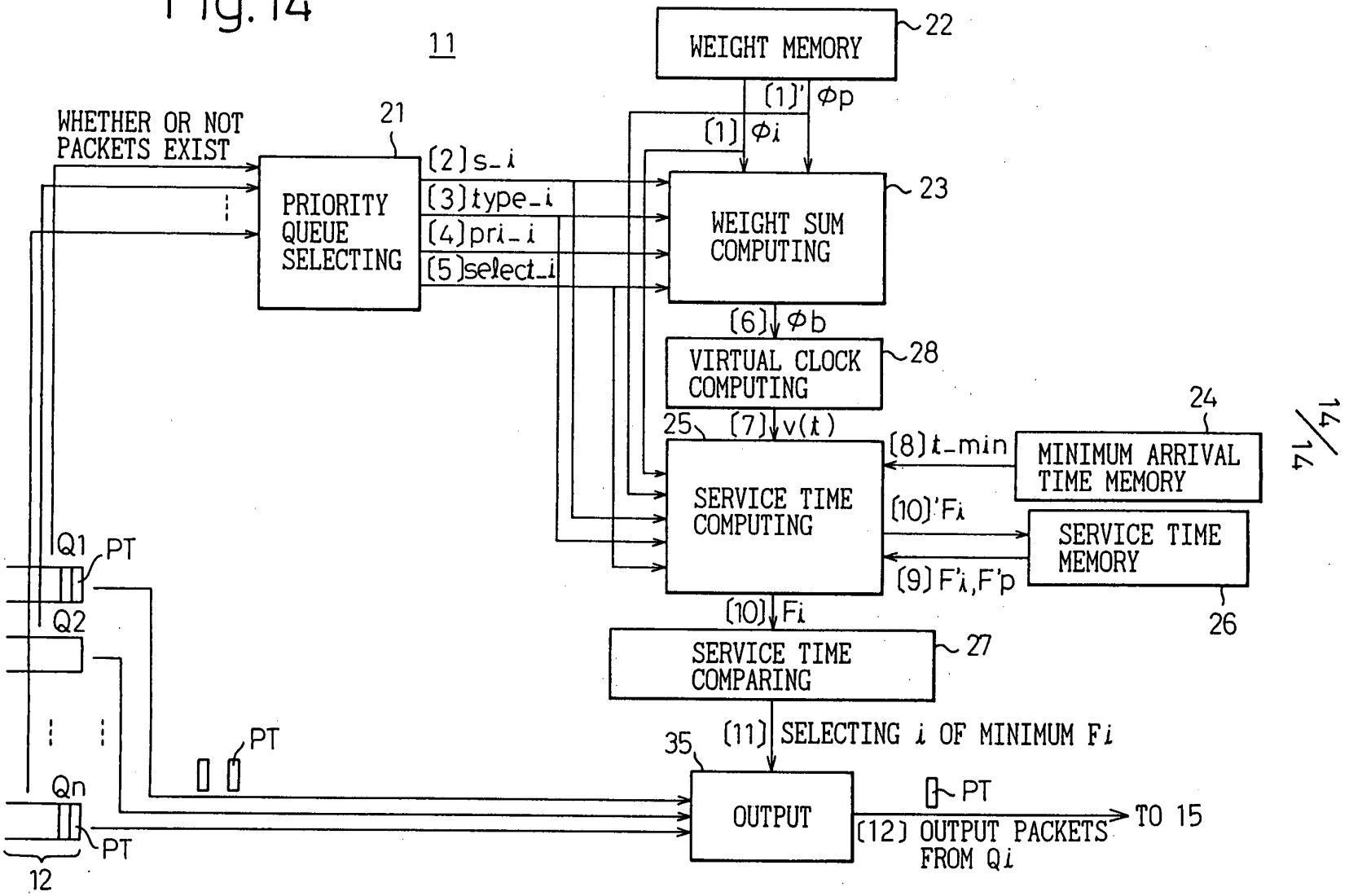

11
21
PRIORITY QUEUE SELECTING
SELECTED PRIORITY QUEUE
(1)
22
WEIGHT MEMORY
φp
(2)'
φi
(2)
23
WEIGHT SUM COMPUTING
φb
(3)
28
VIRTUAL CLOCK COMPUTING
(3)' VIRTUAL CLOCK
24
MINIMUM ARRIVAL TIME MEMORY
(4) t-min
25
SERVICE TIME COMPUTING
(6) SERVICE TIME
(5) SERVICE TIME
26
SERVICE TIME MEMORY
(6)' SERVICE TIME
27
SERVICE TIME COMPARING

Fig.14


11
WEIGHT MEMORY
22
(1)' φp
(1) φi
WHETHER OR NOT PACKETS EXIST
21
PRIORITY QUEUE SELECTING
(2) s_i
(3) type_i
(4) pri_i
(5) select_i
WEIGHT SUM COMPUTING
23
(6) φb
VIRTUAL CLOCK COMPUTING
28
24
25
(7) v(t)
(8) t_min
MINIMUM ARRIVAL TIME MEMORY
SERVICE TIME COMPUTING
(10)' Fi
SERVICE TIME MEMORY
(9) F'i, F'p
26
Q1
PT
Q2
(10) Fi
SERVICE TIME COMPARING
27
PT
(11) SELECTING i OF MINIMUM Fi
35
Qn
OUTPUT
PT
TO 15
(12) OUTPUT PACKETS FROM Qi
PT
12